

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

---

GLOBALFOUNDRIES U.S. INC.

Plaintiff,

v.

TCL CORPORATION, TCL ELECTRONICS  
HOLDINGS LIMITED and  
TTE TECHNOLOGY, INC. d/b/a TCL  
NORTH AMERICA

Defendants.

---

)  
)  
)  
) C.A. No. \_\_\_\_\_  
)  
)

**JURY TRIAL DEMANDED**

**COMPLAINT**

Plaintiff Globalfoundries U.S. Inc. (“Globalfoundries” or “Plaintiff”) brings this patent infringement action against Defendants TCL Corporation, TCL Electronics Holdings Ltd., and TTE Technology, Inc. d/b/a TCL North America (collectively, “TCL” or “Defendants”) as follows:

**NATURE OF THE ACTION**

1. This is a civil action for infringement of United States Patent No. 7,750,418 (“418 patent” or the “Asserted Patent”) under the patent laws of the United States, 35 U.S.C. § 1 *et seq.*

**THE PARTIES**

2. Plaintiff Globalfoundries U.S. Inc. is a Delaware corporation with its principal place of business at 2600 Great America Way, Santa Clara, California 95054.

3. Defendant TCL Corporation is a company organized under the laws of China with its principal place of business at 22/F, TCL Technology Building, 17 Huifeng 3rd Road, Zhongkai Hi-tech Development District, Huizhou, Guangdong 516001, China.

4. Defendant TCL Electronics Holdings Limited is a company organized under the laws of China with its principal place of business at TCL Multimedia Building, TCL International E City, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, Guangdong Province 518052, China.

5. Defendant TTE Technology, Inc. d/b/a TCL North America is a Delaware corporation with its principal place of business at 1860 Compton Avenue, Corona, California 92881.

6. Defendants TCL Corporation, TCL Electronics Holdings Limited, and TTE Technology, Inc. are related entities that work in concert to design, manufacture, import, distribute, market, and/or sell the infringing devices.

#### **JURISDICTION AND VENUE**

7. The Court has subject matter jurisdiction over these claims under 28 U.S.C. §§ 1331 and 1338(a) and the patent laws of the United States, 35 U.S.C. § 1 *et seq.*

8. The Court has personal jurisdiction over each of the TCL Defendants consistent with the requirements of the Due Process Clause of the United States Constitution and the Delaware Long Arm Statute. TTE Technology, Inc. is incorporated in Delaware. On information and belief, each TCL Defendant has regularly and systematically transacted business in Delaware, directly or through subsidiaries or intermediaries, and/or committed acts of patent infringement in Delaware as alleged more particularly below. Each TCL Defendant has also placed integrated circuits using Taiwan Semiconductor Manufacturing Company Ltd. (“TSMC”)

28 nanometer and smaller technology<sup>1</sup> and products containing these integrated circuits, such as TCL 55R617 televisions that incorporate MediaTek's 1602 system on a chip ("SoC") manufactured using TSMC's 28 nanometer and smaller technology (the "Accused Products") into the stream of commerce by shipping Accused Products into Delaware, shipping Accused Products knowing that those products would be shipped into Delaware, and/or shipping Accused Products knowing that these Accused Products would be incorporated into other Accused Products that would be shipped into Delaware. For example, TCL Corporation and TCL Electronics Holdings manufacture televisions, including TCL's Class 4K Ultra HD Roku Smart TVs containing Accused Products for distribution and sale in Delaware. The Court therefore has both general and specific personal jurisdiction over TCL.

9. Alternatively, the Court has personal jurisdiction over TCL Corporation under Federal Rule of Civil Procedure 4(k)(2). This cause of action arises under federal law, TCL Corporation is not subject to the general jurisdiction of any one state, and the exercise of jurisdiction is consistent with the United States Constitution.

10. Alternatively, the Court has personal jurisdiction over TCL Electronics Holdings Limited under Federal Rule of Civil Procedure 4(k)(2). This case of action arises under federal

---

<sup>1</sup> TSMC 28 nanometer and smaller technology includes TSMC's 28 nanometer technology (including TSMC's High-k Metal Gate gate-last technology and high-performance compact technology) ("28 Nanometer"), TSMC's 22 nanometer technology (including TSMC's 22 nanometer ultra-low power, 22 nanometer ultra-low leakage, and 22 nanometer ultra-low leakage static random access memory technologies) ("22 Nanometer"), TSMC's 20 nanometer technology ("20 Nanometer"), TSMC's 16/12 nanometer technology (including TSMC's 16 nanometer Fin Field Effect Transistor ("FinFET") process, 16 nanometer FinFET Plus process, 16 nanometer FinFET Compact Technology, and 12 nanometer FinFET Compact Technology) ("16 Nanometer"), TSMC's 10 nanometer technology (including TSMC's 10 nanometer FinFET process) ("10 Nanometer"), TSMC's 7 nanometer technology (including TSMC's 7 nanometer FinFET process) ("7 Nanometer"). Globalfoundries reserves the right to accuse any forthcoming TSMC technology, such as TSMC's 7 nanometer extreme ultraviolet lithography technology and TSMC's 5 nanometer technology.

law, TCL Electronics Holdings Limited is not subject to the general jurisdiction of any one state, and the exercise of jurisdiction is consistent with the United States Constitution.

11. With respect to Defendant TCL Corporation, a Chinese company, venue is proper in this district because suits against foreign entities are proper in any judicial district where they are subject to personal jurisdiction .

12. With respect to Defendant TCL Electronics Holdings Limited, venue is proper in this district because suits against foreign entities are proper in any judicial district where they are subject to personal jurisdiction.

13. With respect to Defendant TTE Technology, Inc., venue is proper in this district under 28 U.S.C. § 1400(b) because TTE Technology, Inc. resides in this district.

### **FACTUAL BACKGROUND**

14. Globalfoundries is a U.S. company with manufacturing facilities that use and develop some of the world's most advanced semiconductor devices available today. Building on IBM's world-class semiconductor technology heritage, Globalfoundries, the acquirer of IBM's semiconductor division, has been accredited as a Category 1A Microelectronics Trusted Source for fabrication, design, and testing of microelectronics by the U.S. Department of Defense (DOD).<sup>2</sup> Globalfoundries' East Fishkill, New York facility is currently the most advanced Trusted Foundry, and as such is the only facility of its kind that can provide certain advanced circuits to satisfy the DOD's requirements. As the second-largest foundry in the world and the only advanced Trusted Foundry, Globalfoundries is uniquely equipped to efficiently and quickly meet the DOD's advanced and highly classified manufacturing and production needs—and is also equipped to do the same for its private-sector clients.

---

<sup>2</sup> "Aerospace and Defense," <https://www.globalfoundries.com/market-solutions/aerospace-and-defense>.

15. Globalfoundries is the most advanced pure-play foundry in the U.S. and Europe, and employs thousands of people in the U.S. and worldwide. While other companies were abandoning semiconductor manufacturing in the U.S., Globalfoundries bucked this trend by investing billions of dollars on advanced technology and research in the United States. Globalfoundries originated from another leading U.S. semiconductor company, Advanced Micro Devices' semiconductor manufacturing arm in 2009 and expanded globally through acquisition and organic investment. Its largest expenditure by far is its \$15 billion organic U.S. investment in its leading-edge, 300 acre facility known as Fab 8 in Malta, New York. Globalfoundries broke ground for that state of the art facility in 2009 and produces leading edge technology from that location to customers worldwide. A major U.S. acquisition took place in 2015 when Globalfoundries acquired IBM's microelectronics facilities and personnel in Burlington, Vermont and East Fishkill, New York—facilities that became Fab 9 and Fab 10, respectively. Globalfoundries acquired not just IBM's facilities and personnel, but also the fruits of IBM's decades of industry-leading investment in U.S. semiconductor fabrication capacity and technology. Specifically, Globalfoundries obtained 16,000 IBM patents and applications (including the '418 patent asserted in this action); numerous world-class technologists; decades of experience and expertise in semiconductor development, device expertise, design, and manufacturing; and an expanded manufacturing footprint. The acquisition cemented Globalfoundries' role as a global leader in world-class semiconductor manufacturing and advanced process technologies.<sup>3</sup>

---

<sup>3</sup> "Globalfoundries Completes Acquisition of IBM Microelectronics Business," <https://www.globalfoundries.com/news-events/press-releases/globalfoundries-completes-acquisition-of-ibm-microelectronics-business>.

16. Globalfoundries' U.S. manufacturing facilities in Burlington, Vermont; East Fishkill, New York; and Malta, New York use and develop some of the most advanced process nodes and differentiated technologies (inclusive of its 12/14nm FinFET, RF and Silicon Photonics technology solutions) available today. Fab 8 is a leading fabrication facility for advanced manufacturing in the U.S., with 40,875 square meters of cleanroom space and continued expansion, and over 3,000 total employees as of June 2019. The current capital investment for the Fab 8 campus stands at more than \$15 billion, making Fab 8 the largest public-private sector industrial investment in New York State's history. The significance of this investment and its importance to advanced manufacturing in the U.S. have been recognized by top government officials, including by the President of the U.S. during a 2012 visit to New York hosted in part by Globalfoundries.<sup>4</sup>

17. Globalfoundries' investment from the Champlain Valley through the Hudson Valley makes it the spine of the Northeast's Tech Valley. Three out of Globalfoundries' five fabs are in the U.S., but investment does not stop at its manufacturing capacity. Globalfoundries' manufacturing footprint is supported by facilities for research, development, sales, and design enablement located near hubs of semiconductor activity, including in Santa Clara, California; Dallas, Texas; Austin, Texas; Rochester, Minnesota; Endicott, New York; and Raleigh, North Carolina. Of its 16,000 employees worldwide, approximately 7,200 are employed in the U.S.

18. However, the manufacturer of the MediaTek products used in TCL products accused of infringing in this action, TSMC, has taken a different approach and has decided to

---

<sup>4</sup> "Globalfoundries Welcomes President Barack Obama to NY's Capital Region," <https://blog.globalfoundries.com/globalfoundries-welcomes-president-barack-obama-to-nys-capital-region/>.

simply use Globalfoundries' patented inventions without payment or permission. TSMC is a competing semiconductor foundry with manufacturing facilities located primarily in Hsinchu, Taiwan. TSMC has recently expressed an interest in building a new manufacturing facility in the U.S., but has not reported any tangible steps toward implementing its ostensible interest. In contrast, TSMC completed building the most advanced manufacturing facility of its kind in mainland China last year. By bringing advanced 16nm FinFet to China, TSMC has positioned itself to benefit further from the shift in global supply chains out of the U.S. and Europe into Greater China. TSMC develops, manufactures, imports, and sells for importation into the U.S. semiconductor devices, including to the Defendants. But TSMC does these things on the back of Globalfoundries, using Globalfoundries' patented technologies to make its products. Indeed, although its infringing chips have flooded the U.S. market, it appears that TSMC has attempted to avoid being subject to patent infringement allegations in the U.S. through creative legal and tax structuring. As set forth below, the Accused Products incorporate, without any license from Globalfoundries, many technologies developed by Globalfoundries and protected by patents owned by Globalfoundries. TSMC's, and/or its customers', importation of infringing articles into the U.S. from Greater China and elsewhere abroad directly harms Globalfoundries and its billions in U.S. investments in manufacturing. Globalfoundries respectfully seeks relief from this Court for Defendants' infringement.

### **THE ASSERTED PATENT**

19. The '418 patent is entitled "Introduction of metal impurity to change workfunction of conductive electrodes," and issued on July 6, 2010 to inventors Michael P. Chudzik, Bruce B. Doris, Supratik Guha, Rajarao Jammy, Vijay Narayanan, Yun Y. Wang, and Keith Kwong Hon Wong. Globalfoundries owns the entire right, title, and interest in and to the '418 patent. A copy of the '418 patent is attached to this Complaint as Exhibit A.

### **CLAIMS FOR PATENT INFRINGEMENT**

20. The allegations provided below are exemplary and without prejudice to Globalfoundries' infringement contentions. In providing these allegations, Globalfoundries does not convey or imply any particular claim constructions or the precise scope of the claims. Globalfoundries' claim construction contentions regarding the meaning and scope of the claim terms will be provided under the Court's scheduling order and local rules.

21. As detailed below, each element of at least one claim of the Asserted Patent is literally present in the Accused Products, or is literally practiced by the process through which each of the Accused Products is made. To the extent that any element is not literally present or practiced, each such element is present or practiced under the doctrine of equivalents.

### **COUNT I INFRINGEMENT OF THE '418 PATENT**

22. Globalfoundries incorporates by reference the allegations set forth in paragraphs 1 through 21 as though fully set forth herein.

23. On information and belief, TCL has directly infringed and continues to infringe one or more claims of the '418 patent, including at least claim 27, literally or under the doctrine of equivalents, by importing into the United States, and/or using, and/or selling, and/or offering to sell in the United States without authority or license, integrated circuits manufactured by TSMC using, for example, TSMC's 28 Nanometer technology and products containing these integrated circuits (collectively, the "'418 Accused Products"), in violation of 35 U.S.C. § 271. The '418 Accused Products include at least TCL 55R617 televisions that incorporate MediaTek 1602 systems on a chip ("SoCs") fabricated using, for example, TSMC's 28 Nanometer process.

24. On information and belief, TCL has directly infringed and continues to infringe one or more claims of the '418 patent, including claim 27, literally or under the doctrine of



equivalents, by importing into the United States, selling, and/or offering for sale in the United States, without authority or license, '418 Accused Products, in violation of 35 U.S.C. § 271(a) and (g). On information and belief, TCL imports '418 Accused Products into the United States for sales and distribution to customers located in the United States. For example, on information and belief, TCL imports such televisions to warehouses in California for sales throughout the United States. On information and belief, TCL sells '418 Accused Products in the United States. For example, TCL sells to or through retail companies such as Amazon and Best Buy for distribution to consumers. On information and belief, these direct sales include sales of '418 Accused Products in the United States. On information and belief, TCL offers the '418 Accused Products for sale in the United States. For example, TCL engages in sales, marketing, and contracting activity in the United States and/or with United States offices of its customers. In particular, TCL has a distribution arrangement with Amazon.com, Inc. for sales throughout the United States that TCL links to and advertises on its website ([www.tclusa.com](http://www.tclusa.com)).

25. The '418 Accused Products are manufactured by a process including all of the limitations of at least claim 27 of the '418 patent. Specifically, claim 27 of the '418 patent claims a method of changing workfunction of a conductive stack comprising: providing a material stack that comprises a dielectric having a dielectric constant of greater than silicon dioxide, a metal-containing material located above said dielectric, and a conductive electrode located directly on an upper surface of said metal-containing material; and introducing at least one workfunction altering metal impurity into said metal-containing material wherein said at least one workfunction altering metal impurity is introduced during forming of a metal impurity containing layer or after formation of a layer containing said metal-containing material.

26. The '418 Accused Products are made by a method of changing workfunction of a conductive stack. TSMC's manufacture of each of the '418 Accused Products involves changing workfunction for at least some conductive stacks in the product.

27. During the manufacture of the '418 Accused Products, a material stack is provided that comprises a dielectric having a dielectric constant of greater than silicon dioxide, a metal-containing material including located above said dielectric, and a conductive electrode located directly on an upper surface of said metal-containing material. TSMC's manufacture of at least one p-type FET in each of the '418 Accused Products includes creating a material stack that comprises HfO (a dielectric having a dielectric constant of greater than silicon dioxide), interfacial TiN (a metal-containing material located above said dielectric), and TiN WF (a conductive electrode located directly on an upper surface of said metal-containing material).

28. During the manufacture of the '418 Accused Products, at least one workfunction altering metal impurity is introduced into said metal-containing material wherein said at least one workfunction altering metal impurity is introduced during forming of a metal impurity containing layer or after formation of a layer containing said metal-containing material. TSMC's manufacture of at least one p-type FET in each of the '418 Accused Products includes introducing TiAlCOCIF fill (at least one workfunction altering metal impurity) into said metal-containing material wherein said at least one workfunction altering metal impurity is introduced after formation of a layer containing said metal-containing material.

29. On information and belief, the '418 Accused Products are neither materially changed by subsequent processes nor become trivial and nonessential components of another product.

30. Globalfoundries has suffered and continues to suffer damages as a result of Defendants' infringement of the '418 patent.

31. Defendants' continuing acts of infringement are a basis of consumer demand for the '418 Accused Products. Defendants' continuing acts of infringement are therefore irreparably harming and causing damage to Globalfoundries, for which Globalfoundries has no adequate remedy at law, and will continue to suffer such irreparable injury unless Defendants' continuing acts of infringement are enjoined by the Court. The hardships that an injunction would impose are less than those faced by Globalfoundries should an injunction not issue. The public interest would be served by issuance of an injunction.

#### **JURY DEMAND**

32. Plaintiff demands a jury trial as to all issues that are triable by a jury in this action.

#### **PRAYER FOR RELIEF**

WHEREFORE, Plaintiff respectfully prays for relief as follows:

(a) Judgment that Defendants are liable for infringement one or more claims of the Asserted Patent;

(b) An Order permanently enjoining Defendants and their respective officers, agents, employees, and those acting in privity or in active concert or participation with them, from further infringement of the Asserted Patent;

(c) Compensatory damages in an amount according to proof, including lost profits, and in any event no less than a reasonable royalty;

(d) Pre-judgment interest;

(e) Post-judgment interest;

(f) Attorneys' fees based on this being an exceptional case pursuant to 35 U.S.C. § 285, including pre-judgment interest on such fees;

- (g) An accounting and/or supplemental damages for all damages occurring after any discovery cutoff and through final judgment;
- (h) Costs and expenses in this action; and
- (i) Any further relief that the Court deems just and proper.

Dated: August 26, 2019

Respectfully submitted,

FARNAN LLP

/s/ Brian E. Farnan

Brian E. Farnan (Bar No. 4089)  
Michael J. Farnan (Bar No. 5165)  
919 N. Market Street, 12th Street  
Wilmington, Delaware 19801  
Telephone: (302) 777-0300  
Facsimile: (302) 777-0301  
bfarnan@farnanlaw.com  
mfarnan@farnanlaw.com

*Attorneys for Plaintiff Globalfoundries U.S.  
Inc.*